

What is claimed is:

1. A flare measuring method for checking presence of flare in a semiconductor aligner, comprising:

preparing a first measurement mask pattern including a first rectangular transparent area formed by a first shielding area and a first measuring portion similar to the first transparent area, provided within the first transparent area and having a plurality of first stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals;

preparing a second measurement mask pattern including a second transparent area, similar to the first transparent area and wider than the first transparent area, formed by a second shielding area, and a second measuring unit, provided within the second transparent area, having second stripe-shaped shielding portions identical to the first strip-shaped shielding portions;

a patterning process of projecting the first and the second measurement mask patterns on a resist layer in a reduced size through light exposure and then patterning the exposed resist layer;

a resist length measuring process of optically measuring a first resist pattern length in a direction orthogonal to an alignment direction of a first resist pattern, corresponding to the first stripe-shaped shielding portions

and a second resist pattern length in a direction orthogonal to an alignment direction of a second resist pattern, corresponding to the second stripe-shaped shielding portions, obtained in the patterning process; and

a flare measuring process of checking the presence of a first flare according to a first opening width P1 that is a space between the first shielding area and the first measuring portion, a second opening width P2 that is a space between the second shielding area and the second measuring portion, the first resist pattern length L1, and the second resist pattern length L2.

2. The flare measuring method according to Claim 1, wherein

the first measuring portion includes a double cross shielding portions consisting of a plurality of the first stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals and a plurality of third stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals, crossing with the first stripe-shaped shielding portions at right angles in a central portion;

the second measuring portion includes the second stripe-shaped shielding portions identical to the first stripe-shaped shielding portions of the first measuring portion and fourth stripe-shaped shielding portions identical to the third stripe-shaped shielding portions of

the first measuring portion, crossing with the second stripe-shaped shielding portions at right angles in a central portion;

the resist length measuring process further includes a process of optically measuring a third resist pattern length of a third resist pattern in a longitudinal direction, corresponding to the third stripe-shaped shielding portions and a fourth resist pattern length of a fourth resist pattern in a longitudinal direction, corresponding to the fourth stripe-shaped shielding portions, obtained in the patterning process; and

the flare measuring process further includes a process of checking the presence of a second flare in a direction different from the first flare according to the first opening width P_1 , the second opening width P_2 , the third resist pattern length L_3 , and the fourth resist pattern length L_4 .

3. The flare measuring method according to Claim 2, wherein

the first stripe-shaped shielding portions are different from the third stripe-shaped shielding portions in line width and line intervals,

the first stripe-shaped shielding portions are identical to the second stripe-shaped shielding portions in line width and line intervals, and

the third stripe-shaped shielding portions are identical to the fourth stripe-shaped shielding portions in

line width and line intervals.

4. A flare measuring method for checking presence of flare in a semiconductor aligner, comprising:

preparing a first measurement mask pattern including a first measuring portion having a plurality of stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals, within a first transparent area;

preparing a second measuring mask pattern including a second measuring portion identical to the first measuring portion, within a second transparent area;

after projecting the first and the second measuring mask patterns on a resist layer in a reduced size through light exposure, preparing a first and a second shielding patterns different from each other in area, similar to the first and the second measurement mask patterns with the same or larger area than the first and the second measurement mask patterns;

a patterning process of covering the first measurement mask pattern with the first shielding pattern and covering the second measurement mask pattern with the second shielding pattern, projecting the above on a resist layer in a reduced size through light exposure, and then patterning the exposed resist layer;

a resist length measuring process of optically measuring a first resist pattern length in a direction orthogonal to an alignment direction of a first resist pattern,

corresponding to the first stripe-shaped shielding portions and a second resist pattern length in a direction orthogonal to an alignment direction of a second resist pattern, corresponding to the second stripe-shaped shielding portions, obtained in the patterning process; and

a flare measuring process of measuring the presence of a first flare according to a first shielding width S1 that is a space between the first shielding pattern and the first measuring portion, a second shielding width S2 that is a space between the second shielding pattern and the second measuring portion, the first resist pattern length L1, and the second resist pattern length L2.

5. The flare measuring method according to Claim 4, wherein

the first measuring portion includes a double cross shielding portions consisting of a plurality of the first stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals and a plurality of third stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals, crossing with the first stripe-shaped shielding portions at right angles in a central portion;

the second measuring portion includes the second stripe-shaped shielding portions identical to the first stripe-shaped shielding portions of the first measuring portion and fourth stripe-shaped shielding portions

identical to the third stripe-shaped shielding portions of the first measuring portion, crossing with the second stripe-shaped shielding portions at right angles in a central portion;

the resist length measuring process further includes a process of optically measuring a third resist pattern length of a third resist pattern in a longitudinal direction, corresponding to the third stripe-shaped shielding portions and a fourth resist pattern length of a fourth resist pattern in a longitudinal direction, corresponding to the fourth strip-shaped shielding portions, obtained in the patterning process; and

the flare measuring process further includes a process of checking the presence of a second flare in a direction different from the first flare according to the first shielding width S1, the second shielding width S2, the third resist pattern length L3, and the fourth resist pattern length L4.

6. The flare measuring method according to Claim 5, wherein the first stripe-shaped shielding portions are different from the third stripe-shaped shielding portions in line width and line intervals,

the first stripe-shaped shielding portions are identical to the second stripe-shaped shielding portions in line width and line intervals, and

the third stripe-shaped shielding portions are identical to the fourth stripe-shaped shielding portions in line width and line intervals.

7. A flare measuring mask comprising

a double cross shielding portions consisting of a plurality of first stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals and a plurality of third stripe-shaped shielding portions of the same figure aligned in parallel at regular intervals, crossing with the first stripe-shaped shielding portions at right angles in a central portion, provided within a transparent area.

8. The flare measuring mask according to Claim 7, wherein

the first stripe-shaped shielding portions are deferent from the third stripe-shaped shielding portions in line width and line intervals.

9. The flare measuring mask according to Claim 7, wherein

the transparent area is formed by a shielding area.

10. The flare measuring mask according to Claim 8, wherein

the transparent area is formed by a shielding area.

11. The flare measuring mask according to Claim 7, wherein

a shielding mask is formed in a central lattice area of the double cross shielding portions.

12. The flare measuring mask according to Claim 8, wherein

a shielding mask is formed in a central lattice area of

the double cross shielding portions.

13. The flare measuring mask according to Claim 9, wherein
a shielding mask is formed in a central lattice area of
the double cross shielding portions.

14. The flare measuring mask according to Claim 10, wherein
a shielding mask is formed in a central lattice area of
the double cross shielding portions.